AMERICAN ANNALS OF THE DEAF

FOUNDED 1847

Official Organ

Conference of Executives of American Schools for the Deaf

FOUNDED 1868

Convention of American Instructors of the Deaf

FOUNDED 1850

POWRIE V. DOCTOR
Editor

LEONARD M. ELSTAD
Associate Editor

Under the Direction of the Executive Committee of the Conference

CLARENCE D. O'CONNOR	New York, 1955
MARVIN B. CLATTERBUCK	Oregon, 1955
J. G. DEMEZA	Ontario, 1956
ROBERT S. BROWN	Mississippi, 1956
EDMUND B. BOATNER	Connecticut, 1957
MARSHALL S. HESTER	New Mexico, 1957
WILLIAM J. MCCLURE	Tennessee, 1957
A. S. MYKLEBUST	South Dakota, 1957
NATHAN P. HARRIS	Massachusetts, 1957
HOWARD M. QUIGLEY	Minnesota, 1957

SEPTEMBER, 1954

Volume 99 **Number 4**

THE CONFERENCE OF EXECUTIVES OF AMERICAN SCHOOLS FOR THE DEAF

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THE CONFERENCE OF EXECUTIVES OF AMERICAN SCHOOLS FOR THE DEAF, originally the Conference of Superintendents and Principals of American Schools for the Deaf, was founded in 1868 and subsequently incorporated under the laws of the State of Maryland in 1931. The Conference is an organization of the executive heads of schools for the deaf in the United States and Canada, and has for its object "to promote the management and operation of schools for the deaf along the broadest and most effective lines and to further and promote the general welfare of the deaf."

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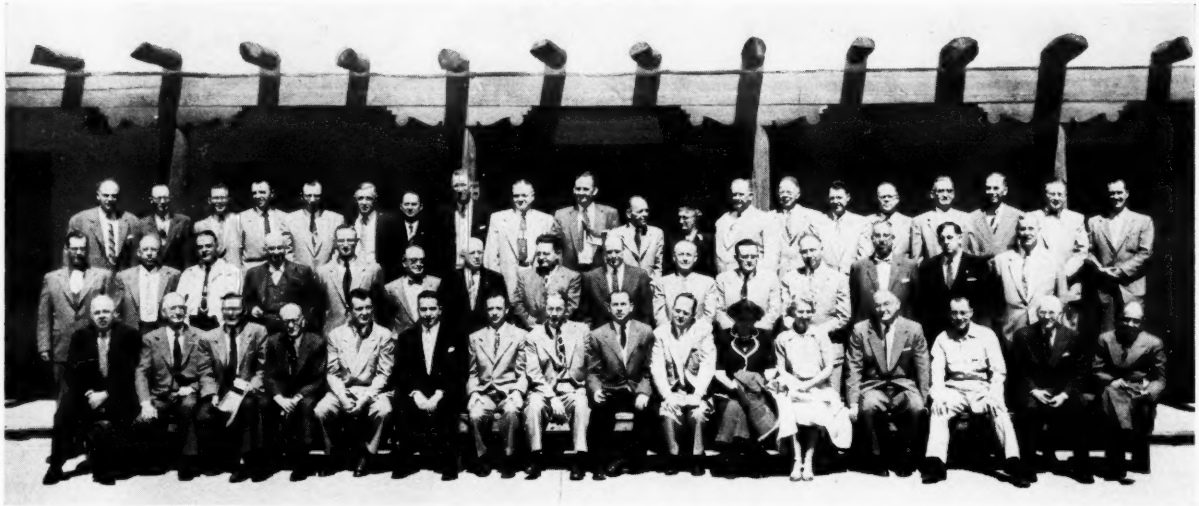
THE CONVENTION OF AMERICAN INSTRUCTORS OF THE DEAF, founded in 1850 and incorporated by act of Congress in 1897, is an organization of educators of the deaf in the United States and Canada with the general object of "promotion of the education of the deaf on the broadest, most advanced, and practical lines," and for that purpose "to secure the harmonious union in the organization, of all persons actually engaged in educating the deaf in America."

THE TWENTY-SIXTH REGULAR MEETING OF THE CONFERENCE OF EXECUTIVES OF AMERICAN SCHOOLS FOR THE DEAF

New Mexico School for the Deaf, Santa Fe, New Mexico
April 20–24, 1954



First row (front) left to right—TWITMEYER, BJORLEE, STEVENSON, CLOUD, STELLE, N. HARRIS, TILLINGHAST, QUIGLEY, BOATNER, BRILL, SCHMIDT, MRS. TRACY, SILVERMAN, NICHOLS, O'CONNOR, KNACK

Second row (center)—DILLON, HESTER, SIDERS, ABERNATHY, MCCLURE, BROOKS, DAVIS, G. HARRIS, DEMEZA, ELSTAD, CLATTERBUCK, EPPERSON, ROTH, CRAIG, BRYAN

Third row (back)—DOCTOR, SCHUNHOFF, HOAG, YOUNGS, SMITH, PARKS, BROWN, BERG, MYKLEBUST, RANEY, INGLE, MRS. INGLE, PATTON, WHITEHEAD, REAY, GALLOWAY, KLEIN, LEARD, JACKSON, WALLACE.

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AMERICAN ANNALS OF THE DEAF

Vol. 99 September, 1954 No. 4

The Twenty-sixth Regular Meeting Conference of Executives of American Schools for the Deaf

New Mexico School for the Deaf
Santa Fe, New Mexico, April 20–24, 1954

THE Twenty-sixth Regular Meeting of the Conference of Executives of American Schools for the Deaf met at the New Mexico School for the Deaf, Santa Fe, New Mexico, April 20–24, 1954.

In the President's address, Howard M. Quigley, Superintendent, Minnesota School for the Deaf, stressed the importance of the work of the Committees of the Conference and their possible influence on national trends in the education of the deaf.

The keynote address by Nathan P. Harris, Principal, Horace Mann School, Roxbury, Massachusetts, was on "Some Aspects of School Placement of Young Deaf Children."*

The following discussion sessions were held:

Subject: *The Educational Program*

Leader: Clarence D. O'Connor, Supt., Lexington School, New York, N. Y.

Recorder: Hugo Schunhoff, Supt., West Virginia School, Romney, W. Va.

Subject: *Slow Learning Children and Other Doubly Handicapped Children*

Leader: Robert S. Brown, Supt., Mississippi School, Jackson, Miss.

* This address was published in the May, 1954, issue of the ANNALS.

Recorder: John M. Wallace, Supt., Florida School, St. Augustine

Subject: *Vocations, Public and Patron Relationships*

Leader: Joseph P. Youngs, Principal, The Kendall School, Washington, D. C.

Recorder: Archie F. Leard, Supt., Saskatchewan School

Subject: *Uniform Grading, Graduation Requirements, Accrediting on Secondary Levels, Advanced Work, and Secondary School Programs*

Leader: J. G. Demeza, Supt., Ontario School, Belleville, Ont.

Recorder: A. S. Myklebust, Supt., South Dakota School, Sioux Falls, South Dakota

Subject: *Dormitory Personnel*

Leader: Stanley Roth, Supt., Kansas School, Olathe, Kans.

Recorder: Roy G. Parks, Supt., Arkansas School, Little Rock

Subject: *Teachers*

Leader: Howard M. Quigley, Supt., Minnesota School, Faribault

Recorder: Richard G. Brill, Supt., California School, Riverside

Subject: *Record Keeping, Testing, Guidance Programs*

Leader: Virgil Epperson, Supt., Washington School, Vancouver

Recorder: Ralph Hoag, Principal, Arizona School, Tucson

The following tests are commonly used by schools for the deaf:

Preschool and Early School

Leiter
Grace Arthur
Paper & Pencil Group Test
Merrill-Palmer
Nebraska
Otis Quick-Scoring Test

6–7 years up to 10 years

Goodenough
Leiter
Hiskey Nebraska Test of Learning Ability

Ontario Test
Grace Arthur
Wechsler Intelligence Scale for Children
Pintner Test
Vineland Social Maturity

Adolescents

Grace Arthur
Wechsler-Bellevue
Vineland Social Maturity

It was concluded that in all testing programs a proper balance of qualitative information should be considered with the quantitative analysis of data secured from tests. It was further conceded that a wide variety of properly validated tests be used to assist in the objective consideration of a child's psychological, educational, and social potentialities.

None of the representatives of schools present made a practice of refusing admittance for students considered borderline cases or even remotely so on the basis of tests alone. Most administrators agreed that a trial period of from three months to even a year in some cases should be generally practiced to determine continued enrollment of the student in question.*

A report on the status of the *American Annals of the Deaf* for the years, 1952 and 1953 was given by the editor. The report covered circulation, reprints, certification of teachers of the deaf, professional relations, and a financial report.

A report on Gallaudet College was given by the president, Dr. Leonard M. Elstad. The growth of the student body in the college was clearly shown. In 1943 the enrollment was 140. Then followed fall enrollments of 142-152-166-174-190-209-222-236-248-262, with prospects of an enrollment of 280 or more for the fall of 1954.

Reports were made by the following Standing and Special Committees:

Teacher Training and Certification, Richard G. Brill.
Educational Research, S. Richard Silverman.

* Brill, Richard G., *Minutes*, The Twenty-sixth Regular Meeting, Conference of Executives of American Schools for the Deaf, Santa Fe, New Mexico, pp. 31–32.

Endowments, Glenn I. Harris.
Legislation, Stanley D. Roth.
Statistics, Roy Moore Stelle.
Program, Marvin B. Clatterbuck.
Standards, James Gallaway.
Deaf-Blind, J. E. Bryan, Lloyd E. Berg, Edward J. Waterhouse.
Teacher Training, Roy G. Parks.
Captioned Films, Edmund B. Boatner.
I.C.E.C. Resolutions.

Dr. Romaine Mackie, Specialist, United States Office of Education, Department of Health, Education and Welfare, outlined the background of the national study, "Qualifications and Preparation of Teachers of Exceptional Children, A Nationwide Study." As chairman of the Sub-Committee dealing with the competencies needed by teachers of deaf children, Dr. S. Richard Silverman of the Central Institute for the Deaf explained in detail why he believed it necessary to include in the report a recommendation that all teachers of the deaf have normal speech and hearing.

Three members of the Competencies Committee did not sign this part of the report and a statement of their position was read by Dr. Richard G. Brill of the California School for the Deaf, Riverside, California. B. B. Burnes, President, National Association of the Deaf, spoke on behalf of the deaf teachers of the deaf. The Conference voted as not being in accord with the requirement for normal speech and hearing for teachers of the deaf.

Edward W. Tillinghast, Supt., Arizona School for the Deaf and Treasurer of the Conference presented a financial report.

The following new officers were elected:

Edmund B. Boatner, President.
Marshall S. Hester, Vice President.
A. S. Myklebust, Treasurer.
William McClure, Secretary.

The two new members of the Executive Committee elected were Howard M. Quigley and Nathan P. Harris. Marvin B. Clatterbuck was elected to complete the term of William J. McClure.

Every one attending the Conference thoroughly enjoyed all of the social activities in which the spirit of the Southwest was quite evident. Supt. and Mrs. Marshall Hester and the teachers and members of the staff are to be commended for their part in making the meeting such a success.

Members Present

Edward R. Abernathy, Ohio State School
Lloyd E. Berg, Iowa School
Ignatius Bjorlee, Maryland State School
Edmund B. Boatner, American School
Richard G. Brill, California School, Riverside
Robert S. Brown, Mississippi School
J. E. Bryan, Alabama School
M. B. Clatterbuck, Oregon State School
Daniel T. Cloud, New York School, White Plains
Sam B. Craig, Western Pennsylvania School, Pittsburgh, Penn.
John Yale Crouter, Rhode Island School
Alfred L. Davis, Georgia School
J. G. Demeza, Ontario School, Canada
Leonard M. Elstad, Gallaudet College, Washington, D. C.
Virgil W. Epperson, Washington School
James H. Galloway, Rochester School, Rochester, N. Y.
Glenn I. Harris, Montana School
Nathan Harris, Horace Mann Day School
Marshall S. Hester, New Mexico School
Truman L. Ingle, Missouri School
Jesse W. Jackson, Nebraska School
John A. Klein, Evangelical Lutheran Institute, Detroit, Mich.
Archie F. Leard, Saskatchewan School, Canada
William J. McClure, Tennessee School
A. S. Myklebust, South Dakota School
Clarence D. O'Connor, Lexington School, New York, N. Y.
Roy G. Parks, Arkansas School
John S. Patton, Louisiana State School
Howard M. Quigley, Minnesota School
Jackson A. Raney, Indiana State School
Stanley D. Roth, Kansas School
Hugo Schunhoff, West Virginia School
Bruce Siders, Michigan School
S. Richard Silverman, Central Institute, St. Louis, Mo.
Carl F. Smith, North Dakota School
Roy M. Stelle, Texas School
Elwood A. Stevenson, California School, Berkeley
Edward W. Tillinghast, Arizona State School
Mrs. Spencer Tracy, John Tracy Clinic, Los. Angeles, Calif.
Edward M. Twitmyer, Pennsylvania School, Philadelphia, Penn.
John M. Wallace, Florida State School
Edward Waterhouse, Perkins Institute, Boston, Mass.
W. M. Whitehead, Virginia State School, Hampton, Va.
Joseph P. Youngs, Kendall School, Washington, D. C.

Honorary Member Present

Powrie V. Doctor, Gallaudet College, Washington, D. C.

Associate Members Present

Thomas Dillon, New Mexico School
Ralph Hoag, Arizona State School
Mrs. Truman Ingle, Missouri School
Edward Reay, Washington School

Guests Present

Alice M. Burtnett, Oklahoma University Speech and Hearing Clinic, Oklahoma City, Okla.
Werner Knach, Evangelical Lutheran Institute, Detroit, Mich.
Mrs. John W. Keys, Cerebral Palsy Institute, Norman, Oklahoma
Verdry W. Vaughan, Oklahoma University Speech and Hearing Clinic Oklahoma City, Okla.

Thirty-second Annual Convention International Council for Exceptional Children

Cincinnati, Ohio
April 28–May 1, 1954

THE Thirty-second Annual Convention of the International Council for Exceptional Children, a Department of the National Education Association of the United States, was held April 28–May 1, 1954, in Cincinnati, Ohio. Dr. Truman L. Ingle, Supt. of the Missouri School for the Deaf and President of the Convention of American Instructors of the Deaf, was Chairman of the Section for the Education of the Deaf. Dr. Edward R. Abernathy, Supt., Ohio School for ths Deaf, was Moderator, and Warren E. Johnson, Director, Cincinnati Speech and Hearing Center, was Recorder.

Herschel R. Ward, Supervising Prin., Tennessee School for the Deaf, gave a paper on "Assessing the Readiness of a Deaf Child for Admission to School". John F. Grace, Prin., Gallaudet Day School, St. Louis, Mo., spoke on "A Better Understanding of the Deaf Through a Public Relations Program". The Rev. Paul F. Klenke, Prin., St. Rita School for the Deaf, Cincinnati, and Dr. Powrie V. Doctor, Editor, *American Annals of the Deaf*, summarized the papers.

On Friday, April 30, Jacob L. Caskey, Vocational Director, Indiana School for the Deaf, Indianapolis, Ind., gave a paper on "What Should Be the Vocational Aims of a School for the Deaf?" Arne T. Darbo, National Director, Special Instrument Division, The Maico Co., Minneapolis, Minn., spoke on "Ethical Salesmanship in the Hearing Aid Field." Those taking part in the panel discussion were Walker Nichols, Sales Manager, Precision Hearing Aids, Chicago, Ill., George B. Griggs, Sales Manager, Jay L. Warren, Inc., Chicago, Ill., William J. McClure, Supt., Tennessee School for the Deaf, Knoxville, Tenn., Ralph L. Wagner, Rehabilitation Manager, Hearing Aid Division, Zenith Radio Corporation, Chicago, Ill. Howard M. Quigley,

Supt., Minnesota School for the Deaf, Faribault, Minn., and Eugene L. Stevens, Assistant Supervisor in Charge of Speech and Hearing, Cincinnati, Ohio, summarized the papers. In the Section for the Multiple Handicapped, Dr. Powrie V. Doctor gave a paper on "Multiple Handicaps in the Field of Deafness as Reported in the *American Annals of the Deaf*."

In the Panel on the Conservation of Hearing those giving papers were Alice Streng, Director, Division of Exceptional Education, Wisconsin State College, Milwaukee, Wis., Mrs. Rachel Dawes Davies, Kent State University, Catherine Lee Fogle, University of Illinois, Vivian T. Harway, Michigan State Normal College, Ypsilanti, Mich., and Alice Kent, Supervisor, Deaf and Hard of Hearing, East Cleveland, Ohio.

Sixty-third Summer Meeting Alexander Graham Bell Association for the Deaf

June 14–18, 1954
St. Louis, Missouri

THE Sixty-third Summer Meeting of the Alexander Graham Bell Association for the Deaf met in St. Louis, Missouri June 14–18, 1954. Dr. Helen Schick Lane, Principal and Dr. S. Richard Silverman, Director, of the Central Institute for the Deaf, were Co-Chairmen of the Summer meeting Committee. Other members on the Committee were: Sister Anna Rose, Principal, St. Joseph Institute for the Deaf, St. Louis; John F. Grace, Principal, Gallaudet Day School, St. Louis; Dr. Truman L. Ingle, Superintendent, Missouri School for the Deaf, Fulton, Missouri; Thomas K. Kline, Superintendent, Illinois School for the Deaf, Jacksonville, Illinois; and E. Milo Pritchett, Director of Special Education, Public Schools, East St. Louis, Illinois.

On Monday evening an Open House and Reception were held at the Central Institute for the Deaf. The entire personnel in the new research unit was on duty during the evening showing the visitors the many different phases of the work being undertaken. On Tuesday evening a Reception and Open House were held at the Gallaudet Day School following the school's Commencement Exercises. On Wednesday luncheon meetings were held by the alumni of the Central Institute for the Deaf, Clarke School for the Deaf, Gallaudet College, and the Lexington School for the Deaf. On Wednesday evening a picnic supper and Open House were held at the St. Joseph Institute in University City. On Thursday evening the Convention Banquet was held at the Hotel Chase.

On Monday afternoon, Dr. Clarence D. O'Connor, Superintendent of the Lexington School for the Deaf and President of The Alexander Graham Bell Association for the Deaf spoke on "What Is 'Special' about the Education of the Deaf?" Dr. Irving S. Fusfeld, Vice President of Gallaudet College, spoke on "A Cross-Section Evaluation of the Academic Progress of Schools for the Deaf."

Demonstrations were given in Language, Auditory Training, and Speech. Miss Hattie Harrell, Director, The Tucker-Maxon Oral School, Portland, Oregon, was the moderator for the panel discussion on Language, Miss Elizabeth V. Scott, Teacher, Evansville, Indiana, moderator for the demonstration on Auditory Training, and Dr. Leo G. Doerfler, University of Pittsburgh, Moderator for the discussion on Auditory Training, Miss June Miller, University of Kansas, moderator for the demonstration on Speech Skills, and Eugene L. Stevens, Cincinnati Public Schools, moderator for the panel discussion on the Teaching of Speech.

Miss Jacqueline Keaster, Chief Audiologist, Children's Hospital Society of Los Angeles, Los Angeles, Calif., spoke on the topic, "Where Should the Deaf Child be Educated?" Roy Moore Stelle, Supt. of the Texas School, was Moderator for a panel discussion on the same subject. Dr. Clarence V. Hudgins, Director of Research, Clarke School for the Deaf, spoke on "Auditory Training, Its Possibilities and Limitations." Dr. S. Richard Silverman, Director of the Central Institute for the Deaf, spoke on "The Teaching of Speech; Differences and Agreements." Dr. Helen S. Lane, Principal, Central Institute for the Deaf, was Moderator for a panel discussion on "Relation of Peripheral Fields to the Education of the Deaf."

Audiology—As a Service of a School for the Deaf*

JOSEPHINE CARR, M.A., PRINCIPAL, LOWER DIVISION
Iowa School for the Deaf, Council Bluffs

THE audiologic services of a school for the deaf for the most part are educational services. It is true that much time may be devoted to diagnostic measurements and other clinical evaluations as well as to problems in research by audiology departments of schools for the deaf, but ultimately these clinical evaluations and research data are related as closely as possible to the educational program of the school, and the educational program of schools for the deaf has changed greatly in the past quarter-century. More and more emphasis has been placed upon the use of amplification in the training of the residual hearing of students, and this in turn has broadened the scope of activities of the audiologist, either full or part-time, in a school for the deaf. Fauth and Fauth in a study of the *Proceedings* of the Convention of American Instructors of the Deaf (1) state that as early as the latter part of the nineteenth century attention was given to the utilization of residual hearing in teaching techniques, but it was not until fairly recently that amplification and electronics equipment were used to any great extent in the instruction of students in schools for the deaf.

Electric audiometers were first produced about 25 years ago (6), and few schools for the deaf owned a pure-tone audiometer at that time. Fewer still had any sort of a sound-treated testing room. Then, and for a number of years to come, audiologic service actually consisted of audiometric evaluations, which were usually made by a member of the school staff, in addition to his other duties and responsibilities.

After 1930 a few schools for the deaf added group hearing aids to their equipment (4), and even more schools purchased pure-tone audiometers and began a program of

* Presented on the program at the meeting of the Central States Speech Association, Chicago, Illinois, April 10, 1954.

hearing-testing. It is interesting to note that a tabulation of hearing aid equipment used in schools for the deaf was first made in the January, 1946, issue of the AMERICAN ANNALS OF THE DEAF, at which time it was reported that 4,174 students out of a total of 17,674 in 197 schools in the U. S. were using hearing aids, either group or individual (2). Contrast these figures with those given in the January, 1953, issue of the AMERICAN ANNALS OF THE DEAF, in which it was reported that 11,435 students out of a total of 21,545 in 290 schools and classes were using hearing aids, either group or individual (3). This increase in the number of students using hearing aids in our schools for the deaf from approximately 25 per cent in 1946 to more than 50 per cent in 1953 accounts in part for the increase in audiologic services being given by schools for the deaf, as evidenced by the fact that 18 schools for the deaf were reported in 1953 as having speech and hearing clinics in which audiologic services were rendered.

Other factors, however, have contributed greatly to the need and provision for increased audiologic services of schools for the deaf. Within the past decade research centers in universities, hospitals, and private laboratories have added a tremendous wealth of information to our knowledge of the science of hearing. Improved speech reception threshold tests (14) (15), improved techniques in the testing of the hearing of children (7) (8), and the refinement of electronics equipment for both diagnostic and training purposes have provided information and tools with which schools for the deaf have been able to broaden their scope of audiologic services in the past few years.

Contributing also to the increase in audiologic services of a school for the deaf has been the training in recent years of personnel who are able to render service beyond that of audiometric testing. Universities throughout the nation have enlarged and broadened their curricula in audiology and special education to provide training for persons either engaged or preparing to engage in the education of the deaf (5). With more persons trained in audiologic problems available, schools for the deaf have been able to add members to their staff who are equipped to render additional services.

Probably the most important factor which has influenced the kind and amount of audiologic services offered by a school for the deaf has been the broadening of the educational program of the school itself. The tremendous increase in the number of group and individual hearing aids used, the addition of refined electronics equipment for diagnostic testing, and the provision for some type of counselling and training for students, parents, and teachers have added to the scope of audiologic services provided by a school for the deaf.

These services have broadened within the past few years to the extent that in many such schools a separate department has been established in order to facilitate the provision of audiologic services. In general, these services provided by schools for the deaf, either partially or wholely, may be classed as those of a clinical, research or teaching nature.

One of the clinical services provided by a school audiologist is that of audiometric testing. The audiologist routinely tests the hearing of each student with a pure-tone audiometer, and a record of his hearing loss is provided his teacher, as well as kept on file. In many schools, additional speech reception threshold tests are given (13), as well as speech and speechreading evaluations. Many schools send the results of such tests to the student's parents, with proper explanation.

Often, in schools for the deaf, the audiologist is called upon to recommend the selection and purchase of electronics equipment. He supervises the installation of group hearing-aid equipment, and frequently he may even construct such equipment. He is a "trouble-shooter" and a repairman in some schools and is responsible for keeping hearing aid equipment in good working condition. Some schools are equipped to provide individual hearing aid selection, and in such cases the audiologist is responsible for giving objective hearing aid evaluations (13).

Aside from these clinical services provided for students, teachers and parents of the school itself, some schools for the deaf render services to outside groups and agencies. In localities where no other source of help is available, the school for the deaf often provides audiometric testing

services for referrals from public schools and local agencies. Some schools, through their clinics, offer hearing aid selection and evaluation to individuals other than school personnel.

A number of schools for the deaf carry on a research program in audiology. This research program may be sponsored by the school alone, but usually it is a coöperative endeavor undertaken with a university, a private group, or another school for the deaf. Such research projects are often concerned with the refinement of electronics equipment and improvement in the use of this equipment in the clinic and in the classroom. Such technological advancement in the design and construction of hearing aids (and of all amplification equipment in general) has made it possible to reach and habilitate many profoundly deaf students previously thought to be uneducable aurally. In recent years several schools for the deaf have carried on research concerning the use of exceedingly powerful group hearing aids in sound-treated classrooms and the development of teaching techniques in connection with the use of these aids (10) (18) (19).

Not all research carried on by audiology departments in schools for the deaf is concerned with the problems of hearing alone. Often research is done in areas related to the hearing problem, or in which hearing functions as a part of the problem. Problems dealing with communication skills as they are related to hearing have been given considerable attention recently by personnel in schools for the deaf. Studies have been made concerning the value of amplification and auditory training in increasing speech perception and speechreading ability (11) (12) (17).

However important these research projects have been, they have hardly scratched the surface of the great need for audiologic research in schools for the deaf. Myklebust and Brutten made a survey several years ago of the research needs in the education of the deaf and found that personnel in schools for the deaf rated the need for research in hearing problems as fourth among thirteen possible areas for research (16). Here, indeed, is an area in which audiology may render additional service in the future.

The practical application of clinical and research data to the classroom situation presents another area of service

provided by the audiologist in a school for the deaf. In this respect, he becomes a teacher and a counselor. He assists teachers and students in their use of hearing aid equipment, and in many schools he sets up and directs the auditory training program. He helps interpret clinical data to teachers in order that their instruction may be more effective. Often he works with houseparents in planning more effective utilization of hearing aids in after-school activities.

Throughout the school year the audiologist meets with parents of students and discusses with them the information he has obtained regarding their child's hearing problem. In order to meet the problem of helping parents accept their child's deafness, many schools for the deaf have provided preschool institutes and parent-training sessions as a part of their educational program. The school audiologist serves as an important member of the team which offers such counselling services to parents, just as the audiologist in a university or hospital situation offers counselling to the parents of acoustically handicapped children (9).

In addition to counselling services, the audiologist in a school for the deaf very often acts as an instructor in the teacher-training programs offered by many schools. He conducts courses in audiology (4) and directs the clinical work of the teachers-in-training. He may direct research and experimental projects of an audiologic nature undertaken by these trainees.

Audiology as a service of a school for the deaf has changed tremendously since the first audiometers were used by these schools some twenty-five years ago. The contributions of research centers and universities of refined electronics equipment, improved teaching techniques, and better trained personnel coupled with the expanded educational programs of schools for the deaf have broadened the scope of audiologic services of such schools. The school audiologist, whether full time or not, with the equipment and the information available to him makes possible today an emphasis on hearing, rather than deafness, in the educational program of students in schools for the deaf.

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A Qualitative Analysis of Explanations of Physical Causality

II. Defective Hearing Subjects*

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CHARACTERISTICALLY, defective hearing subjects less adequately explain the causes of physical phenomena than do hearing subjects of the same age, grade and intelligence. This holds for the scientific accuracy of the explanations, the use of logical or prelogical reasoning and the level of generalization used in the statement of materialistic explanations. (1, 2) It has been found that the explanations of the defective hearing day school subjects are more accurate than those of the residential school subjects, but that this difference disappears when the degree of hearing loss is equated in the two groups; that the less accurate explanations are given by those subjects with greater hearing losses; and that those whose hearing losses occurred at an earlier age give less adequate explanations. (1)

The present report is concerned with the qualitative aspects of the explanations of defective hearing subjects. The relation of their residential or day school attendance, the severity of their hearing loss, and their age at the onset of deafness to the source appealed to in their explanations of the causes of physical phenomena is explored. Explanations of 21 questions concerned with the causes of physical phenomena written by 285 defective hearing subjects from ten to twenty years old were classified according to Piaget's seventeen types of causal thought and Deutsche's materialistic-nonmaterialistic classification. The questions used, the technique of gathering the data and the procedure for classifying the explanations has been presented in detail in a report of the comparison of the explanations of hearing and defective hearing subjects (2).

* Part I of this article was published in the ANNALS for March, 1954 (Vol. 99, No. 2), pp. 252–269.

Relation to residential and day school attendance. Among the defective hearing subjects, 177 were enrolled in grades five through twelve in the state residential schools of Minnesota and Wisconsin and 108 were enrolled in similar grades in the day school classes in Milwaukee, Minneapolis and St. Paul. The residential and day school samples were similar in age and intelligence: the mean CAS were 16.10 ± 2.59 and 15.86 ± 1.92 years respectively; the mean Pintner Indexes were 60.5 and 57.8. In degree of

TABLE 1

PERCENTAGES OF EXPLANATIONS OF RESIDENTIAL AND DAY SCHOOL SUBJECTS IN FOUR PIAGET CATAGORIES BY AGE

	CA								
CATEGORY	12	13	14	15	16	17	18	19	20
	RESIDENTIAL								
Phenomenistic	53.9	42.9	35.8	35.9	27.5	28.2	30.5	26.2	24.6
Dynamic	2.4	3.7	2.9	3.7	2.4	4.6	3.1	2.9	4.0
Mechanical	13.6	20.9	29.7	34.5	33.1	35.8	29.7	39.7	37.3
Logical Deduction	2.4	5.8	10.0	10.2	15.0	13.1	16.1	18.2	20.4
	DAY SCHOOL								
Phenomenistic	30.4	41.3	34.4	27.7	23.2	30.5	25.8		
Dynamic	3.9	2.5	2.5	4.0	3.2	3.3	2.0		
Mechanical	42.7	30.2	25.1	31.2	34.2	32.3	29.9		
Logical Deduction	11.3	6.7	10.1	17.8	26.5	15.7	29.9		

hearing loss, however, the groups were dissimilar: the mean hearing loss of the residential school subjects was 86.4 per cent and that of the day school subjects 49.5 per cent.

The number of cases at each age level is not large; varying from six cases at twelve years to 26 cases at fourteen years for the residential groups and from six at eighteen years to 24 at sixteen years for the day school group. Percentages are not very stable by age because of the small numbers of cases at the different age levels. Nevertheless, some tendency is noted for the residential school subjects, age for age to give more phenomenistic explanations and fewer explanations using logical deduction than the day school subjects. For both residential and day school groups the age changes are as expected; a decrease with age in the use of phenomenistic explanations, an increase in the use of logical deduction, little relation with the use of dynamic causality, and divergent patterns for mechanical

explanations. The residential subjects used fewer mechanical explanations at the early ages and a proportion similar to the day school subjects after about 15 years of age.

When the explanations were classified according to the Deutsche materialistic-nonmaterialistic sequence, at least 70 per cent of the explanations at any age were found to be materialistic. For the total residential school groups, 76.4 per cent and for the day school group 79.6 per cent were materialistic. There is no statistical significance in the

TABLE 2

PERCENTAGE OF MATERIALISTIC AND NONMATERIALISTIC EXPLANATIONS USED BY RESIDENTIAL AND DAY SCHOOL SUBJECTS BY AGE

	CA								
CATEGORY	12	13	14	15	16	17	18	19	20
	RESIDENTIAL								
Materialistic	70.6	69.6	75.8	80.5	75.3	77.1	76.3	83.9	75.5
Nonmaterialistic									
External	11.9	8.9	4.4	5.1	5.1	1.4	1.8	1.7	1.5
Internal	4.8	4.1	3.7	5.1	3.8	6.2	5.5	2.7	6.3
Total	16.7	13.0	8.1	10.3	8.9	7.6	7.3	4.4	7.8
Unclassifiable	12.7	17.4	16.1	9.2	15.8	15.3	16.4	11.7	16.7
	DAY SCHOOL								
Materialistic	84.4	79.1	69.8	77.2	84.1	78.6	86.4		
Nonmaterialistic									
External	1.7	2.8	1.2	2.5	2.2	2.9	0.7		
Internal	7.0	3.2	5.2	5.5	3.9	5.1	3.4		
Total	8.7	6.0	6.4	8.0	6.1	8.0	4.1		
Unclassifiable	6.9	14.9	23.8	14.8	9.8	13.3	9.5		

difference of frequency of use of materialistic explanations by the two groups (CR = 0.26). At the various ages, there is no consistency in the greater percentage of materialistic explanations being given by the residential or day school subjects. With increasing age, there is a general decrease in the use of nonmaterialistic explanations by both groups. Since the residential defective hearing use more nonmaterialistic explanations at the early ages, the decrease which occurs is more evident for them.

Unclassifiable explanations include irrelevant, unintelligible, and omitted answers. The more severely handicapped residential deaf omit more questions and give more unintelligible explanations than the less severely handicapped day school defective hearing.

The materialistic explanations were classified according to subdivisions of the Deutsche materialistic sequence,

based on the degree of generalization with which the explanations are stated. The trends with age in the percentage of use of each level of generalization are similar for both residential and day school subjects: the use of lower levels of generalization decrease and that of higher levels of generalization increase with age. The proportionate use at the several age levels differs for the two groups: the residential defective hearing using a lower level of generalization more frequently and a higher level of general-

TABLE 3

PERCENTAGE OF EXPLANATIONS OF RESIDENTIAL AND DAY SCHOOL SUBJECTS IN MATERIALISTIC SEQUENCE SUBDIVISION BY AGE

SUBDIVISIONS	CA 12	13	14	15	16	17	18	19	20
				RESIDENTIAL					
1	1.1	0.6	1.7	3.6	6.4	4.5	6.3	6.0	11.6
2	2.2	10.4	13.8	12.7	15.9	15.7	16.0	19.3	18.4
3	1.1	3.3	6.3	7.3	7.1	8.8	9.7	12.3	15.0
4	18.0	24.7	29.3	30.9	33.6	34.0	28.0	30.4	25.0
5	77.5	61.0	48.9	45.5	37.0	37.0	40.0	32.0	30.0
				DAY SCHOOL					
1	2.6	2.4	2.7	4.2	12.3	7.9	16.4		
2	11.8	7.6	16.8	19.1	17.0	13.3	20.3		
3	4.6	6.4	11.0	16.2	19.8	9.7	15.6		
4	43.5	31.0	20.0	24.5	23.4	30.9	17.2		
5	37.5	52.6	49.5	36.0	27.5	38.2	30.5		

ization less frequently at nearly every age considered. This finding is particularly apparent in the use of the lower level of generalization: at eight years the residential subjects used twice as many as the day school subjects and at 18 years they used one third more.

The greater use of materialistic explanations, the phenomenistic explanations and the lower levels of generalization which is characteristic of the residential subjects is probably associated with differences in hearing acuity between the two groups rather than to differences in the kind of school attended.

Relation to degree of hearing loss. It is known that less residual hearing is related to the use of fewer accurate causal explanations and to more prelogical explanations. This has been reported for scores assigned on the basis of scientific accuracy for the explanation of hearing and

defective hearing subjects matched on age, sex, intelligence and school grade, and the explanations of defective hearing subjects studied in relation to their specific degree of hearing loss. A similar relationship has been suggested by the differences found between residential and day school

TABLE 4

MEAN AGE AND PINTNER SCORE BY PERCENTAGE OF HEARING LOSS

	PERCENTAGE OF HEARING LOSS								
	10–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100
N	26	13	25	21	28	22	26	67	57
CA	15.2	14.3	14.2	15.7	16.2	16.6	16.6	16.3	15.3
Pintner Score	406	396	417	446	459	470	452	454	418

subjects who differ significantly in amount of residual hearing.

Since some relation to the type of reasoning is apparent for widely divergent degrees of hearing loss, the relation is studied for narrower intervals regardless of residential or day school attendance. From Table 4 it is seen that there is no relationship between mean CA or intelligence and the percentage of hearing loss. Thus any shift in the characteristic type of reasoning used at the various per-

TABLE 5

PERCENTAGE OF EXPLANATIONS IN SEVEN PIAGET CATEGORIES BY PERCENTAGE OF HEARING LOSS

	PERCENTAGE OF HEARING LOSS								
CATEGORY	10–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100
Phenomenistic	20.9	27.5	25.4	28.1	28.2	32.9	27.4	33.7	37.9
Magical	0.7	1.8	1.4	2.7	1.2	1.5	1.8	2.2	5.3
Moral	1.2	0.4	0.7	0.5	0.7	1.1	0.5	0.6	0.4
Dynamic	3.9	2.6	3.6	4.5	3.9	2.8	3.8	4.7	3.2
Mechanical	35.9	39.9	37.9	34.5	38.3	27.5	31.3	27.1	28.0
By generation	0.9	0.7	1.4	1.4	1.4	1.3	0.9	0.6	0.6
Logical deduction	28.5	19.8	18.8	15.0	15.1	14.5	18.6	9.7	10.0

centages of hearing loss can be attributed to differences in degree of residual hearing and not to ability differences.

From Table 5, where the seven Piaget categories used by at least one per cent of the cases are presented by percentage of hearing loss, it is evident that the frequency with which the various types of reasoning are used in the explanations varies considerably.

With increased hearing impairment there is more use of phenomenistic explanation: the proportion nearly doubles

as hearing loss increases from less than thirty per cent to total deafness. Conversely the subjects with more useable hearing use logical deduction more frequently: only about one third as many explanations of the totally deaf as those of subjects with less than thirty per cent hearing loss are classified in this category. There is only a slight decrease in the use of mechanical explanation with increased hearing

TABLE 6

PERCENTAGE OF MATERIALISTIC AND NONMATERIALISTIC EXPLANATIONS BY PERCENTAGE OF HEARING LOSS

	PERCENTAGE OF HEARING LOSS								
CATEGORY	10–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100
Materialistic	85.5	83.9	82.1	78.5	81.6	74.9	77.3	70.9	76.0
Nonmaterialistic									
External	2.1	2.9	2.3	3.6	2.0	3.5	2.7	3.1	6.3
Internal	5.1	6.6	5.0	6.1	6.0	4.5	4.8	5.9	3.9
Total	7.2	9.5	7.3	9.7	8.0	8.0	7.5	9.0	10.2
Unclassifiable	7.3	6.6	10.6	11.8	10.4	17.1	15.2	20.1	13.8

loss. Although magical causality is used infrequently, more explanations of this kind are given by subjects with greater hearing losses, never more than 5.3 per cent of the explanations. There is, however, a decided increment in the use of this type of explanation as total deafness is reached. No trend is apparent for the use of moral causality, dynamic causality or causality by generation with increased hearing loss. Throughout the hearing range, phenomenistic, mechanical and logical deduction are the most frequently used types of explanation.

As was expected, the greater proportion of explanations are materialistic at all levels of hearing, although somewhat fewer materialistic explanations are given by those subjects with greater hearing losses. Much of this change is the result of an increase in unclassifiable answers rather than an increase in nonmaterialistic explanations. The totally deaf child apparently is two to three times as likely to give explanations which cannot be classified; nevertheless, about three-fourths of his explanations can be classified. Except for totally deaf children, increased hearing loss does not seem to affect the use of external or internal nonmaterialistic explanations. In all instances except at the one hundred per cent level of hearing loss the internal materialistic explanations are most frequently used.

All materialistic explanations have been classified into the five subdivisions of the Deutsche materialistic sequence, in which subdivision 1 is the highest level of generalization and subdivision 5 is the lowest level. At levels 2, 3, and 4 there is practically no relationship to the percentage of hearing loss. At levels 1 and 5, however, substantial trends are evident. As hearing loss becomes more severe the

TABLE 7

PERCENTAGE OF EXPLANATIONS IN THE MATERIALISTIC SEQUENCE SUBDIVISIONS BY PERCENTAGE OF HEARING LOSS

	PERCENTAGE OF HEARING LOSS								
Subdivisions	10–29	30–39	40–49	50–59	60–69	70–79	80–89	90–99	100
1	13.1	6.3	8.8	5.8	5.6	6.3	8.2	3.8	2.8
2	18.5	14.7	17.1	17.6	15.4	14.7	15.2	13.1	13.2
3	16.8	13.9	12.7	9.8	12.9	7.2	12.9	6.5	6.9
4	27.5	34.0	29.9	30.9	31.0	27.2	27.6	28.7	26.9
5	24.1	31.1	31.5	35.9	35.1	44.6	36.1	48.1	50.2

children use fewer explanations which are highly generalized: 13 per cent of the explanations of the youngsters with hearing losses under 30 per cent are in this category, but only 2.8 per cent of the explanations of the totally deaf are so classified. A reverse trend is apparent in the use of low levels of generalization: about 24 per cent of the explanations of the subjects with less than a 30 per cent hearing loss are in this category as contrasted with 50.2 per cent of the explanations of the totally deaf.

Relation to age of onset of deafness. In order to study the relation of the type of explanation offered to the age at which hearing loss occurred, the defective hearing subjects were divided into three groups: those whose hearing loss was apparent before the age of two; those whose hearing loss occurred between the ages of two and six; and those whose hearing was impaired after the age of six. These ages were selected since they serve as rough division points in the development of language skills. It is likely that those children whose hearing loss occurred before two years of age have not been able to learn language through the normal communicative channels and are most seriously handicapped linguistically. Those children whose loss occurred between the ages of two and six had some opportunity to learn language skills although at this age really mature speech patterns had not yet been firmly established.

If the hearing loss occurred after the age of six, basic language patterns have been laid down and the linguistic handicap should be somewhat less than for the other two groups.

There are no trends in the differences in mean CA and intelligence of the three groups, nor are the differences great enough to have any substantial effect upon the explanations offered. The mean CA for the three groups beginning with those whose hearing loss occurred before two years are: 15.07, 15.69, and 16.29 years. The Pintner scores for the same groups are 451.67, 421.15 and 430.26 respectively.

TABLE 8

SIGNIFICANCE OF THE DIFFERENCES IN USE OF FIVE PIAGET CATEGORIES ACCORDING TO AGE OF ONSET OF DEAFNESS

PIAGET CATEGORY	PER CENT OF USE BY AGE OF ONSET OF DEAFNESS			CRITICAL RATIOS		
	0-2	2-6	6+	0-2 vs. 2-6	0-2 vs. 6+	2-6 vs. 6+
Phenomenistic	37.0	29.2	20.9	0.98	0.94	0.96
Magical	2.9	2.5	2.0	0.17	0.31	0.17
Dynamic	3.0	3.6	4.2	0.22	0.32	0.15
Mechanical	26.2	33.7	40.1	1.10	1.50	0.65
Logical Deduction	10.3	15.7	23.6	1.07	1.72	0.95

The significance of the differences among the three groups in their use of the five most frequently used Piaget categories are not statistically significant. Although the differences are not great, there is a tendency for those subjects deafened at the earlier ages to use prelogical types of explanations more frequently and logical explanations less frequently. The trend in the use of phenomenistic explanations is definite, fairly steady, decreasing from 29 per cent to 27 per cent to 21 per cent as the hearing loss occurred at the later age. The use of logical deduction and mechanical explanation increases steadily. Even though magical and dynamic causality is used infrequently slight trends are evident. Less magical explanation is used when hearing loss occurred at a later age; more dynamic explanation is used under these circumstances.

Those subjects who lost their hearing at an early age are more likely to write explanations which cannot be classified: nearly 19 per cent of the explanations of subjects

deafened before two years, about 13 per cent of those whose hearing loss occurred between two and six, and only 7 per cent of those deafened after six are in this category. The percentage of unclassifiable explanations of those in the last group is very similar to the 7.5 per cent omitted

TABLE 9

SIGNIFICANCE OF THE DIFFERENCE IN THE USE OF MATERIALISTIC AND NONMATERIALISTIC EXPLANATIONS ACCORDING TO AGE OF ONSET OF DEAFNESS

CATEGORY	PER CENT OF USE BY AGE OF ONSET OF DEAFNESS			CRITICAL RATIOS		
	0–2	2–6	6+	0–2 vs. 2–6	0–2 vs. 6+	2–6 vs. 6+
Materialistic	73.6	78.4	84.5	0.73	1.46	0.78
Nonmaterialistic						
External	3.1	3.6	3.5	0.19	0.12	0.03
Internal	3.9	5.1	5.0	0.39	0.27	0.02
Total	7.0	8.7	8.5	0.13	0.11	0.01
Unclassifiable	19.3	12.9	6.7	1.19	2.23	1.09

by hearing subjects as part of this study and the 6.7 per cent reported by Deutsche. Only one of the differences in the use of unclassifiable answers approaches statistical significance: more explanations of those youngsters who became deaf before the age of two are unclassifiable than for those who did not lose their hearing until after six years of age at the five per cent level of confidence.

TABLE 10

SIGNIFICANCE OF THE DIFFERENCES IN THE USE OF MATERIALISTIC SEQUENCE SUBDIVISIONS ACCORDING TO AGE OF ONSET OF DEAFNESS

SUBDIVISION	PER CENT OF USE BY AGE OF ONSET OF DEAFNESS			CRITICAL RATIOS		
	0–2	2–6	6+	0–2 vs. 2–6	0–2 vs. 6+	2–6 vs. 6+
1	4.1	6.5	9.9	0.70	1.09	0.62
2	12.4	14.8	19.2	0.55	0.76	0.65
3	7.1	9.4	14.4	0.60	1.18	0.76
4	25.8	30.9	29.8	0.84	0.76	0.12
5	50.6	38.4	26.7	1.01	1.73	0.85

The expected trend is found in the use of materialistic explanations: the later the age at which hearing loss occurred the higher proportion of explanations are materialistic. None of the differences in the use of materialistic explanations approach significance and in all three groups at least 74 per cent of the explanations are materialistic. The differences in frequency of use of materialistic explanations are not statistically significant.

Although none of the differences in the use of each of the various levels of generalization of materialistic explanations are statistically significant, the differences are all in the expected direction. For all groups the highest level of generalization was used most infrequently. Nevertheless, nearly twice as many of the explanations of those deafened after six as of those deafened before two fall into this category. For the second level of generalization the trend is similar but not as decided. For the lowest level of generalization, a sharp decline in frequency of use is evident, although the differences in actual proportions are not statistically significant. Over half of the explanations of those whose hearing loss occurred early fall into the lowest form of generalization; somewhat over a third of those deafened between two and six and a little over a quarter of those deafened after six are in this category.

Summary

Written explanations of the causes of 21 physical phenomena written by 285 defective hearing subjects from ten to twenty years old were classified according to the 17 types of causality designated by Piaget and according to the materialistic-nonmaterialistic classification devised by Deutsche.

The analysis of the explanations according to residential and day school attendance showed that the proportion of materialistic explanations was substantial for both groups. Phenomenistic explanations decreased and explanations by logical deduction increased with age. The residential group used more phenomenistic explanations, fewer explanations by logical deduction, and more of the lower levels of generalization age for age than did those subjects enrolled in day schools. This difference is probably a reflection of the greater hearing loss of the residential school subjects rather than a difference related to the type of school itself.

When the explanations were analyzed in relation to the degree of hearing impairment, it was found that increased hearing loss was associated with more immature reasoning. More prelogical and fewer logical explanations were given by those subjects with greater hearing losses

even though there were no significant differences in their mean CA or intellectual levels. With increasing severity of defective hearing, more unintelligible or irrelevant explanations are given. Within the category of materialistic explanations, those subjects with greater hearing loss tend to use the lower levels of generalization more frequently and the higher levels of generalization less frequently than do those with less severe hearing impairments. Materialistic explanations are predominant regardless of the degree of hearing loss.

The analysis of the explanations in relation to the age at onset of defective hearing supports the hypothesis that in qualitative as well as quantitative aspects of the explanations early hearing and linguistic experience is beneficial. On the whole those subjects whose hearing loss occurred before the age of two are retarded in the type of explanation they used, and in the level of generalization which they used to express their understanding. They also tended to omit more explanations.

The inability of defective hearing subjects to deal adequately with problems of the causes of physical phenomena has been emphasized in this study. It is important that this inability of the defective hearing in comparison with the hearing be recognized in their approach to the sources of physical causation as well as to the accuracy of their explanations. This retardation is seen to be related to the degree of hearing loss and the age at onset. Such findings may seem merely to reiterate what any good teacher of the deaf knows, but there may be some salutary effect in quantitative evidence supporting this knowledge. This could serve to challenge teachers of the defective hearing to ask themselves how they could bring to these handicapped children the kinds of experiences and understanding which will help them to be better able to attack problems common for both hearing and deaf persons in our scientific world. The answers must come out of the experience of the teachers of the defective hearing plus the accumulation of experimental evidence.

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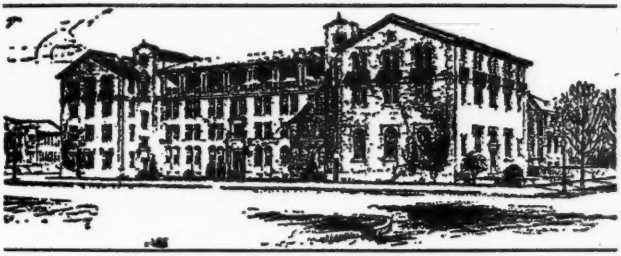

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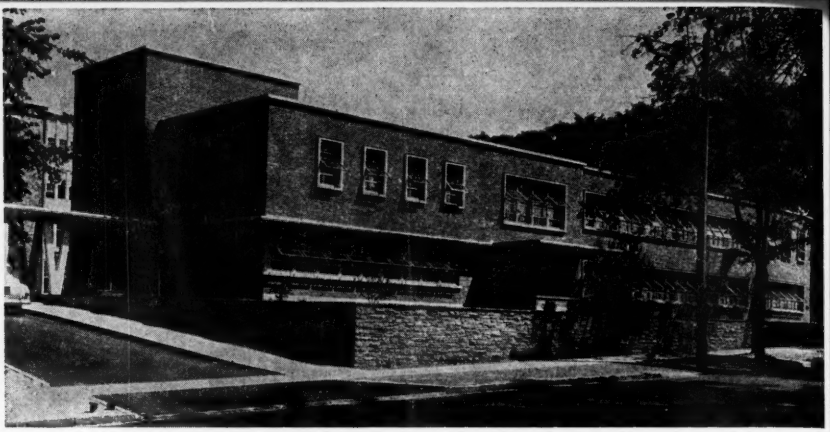

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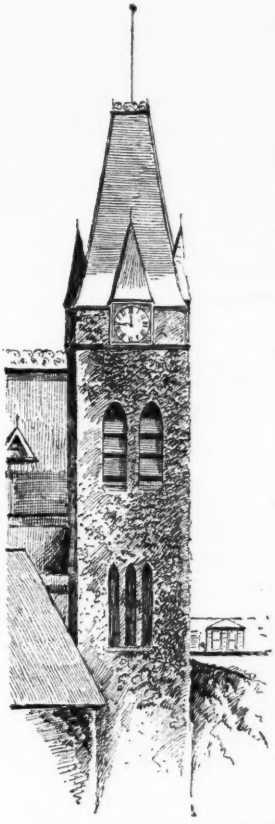

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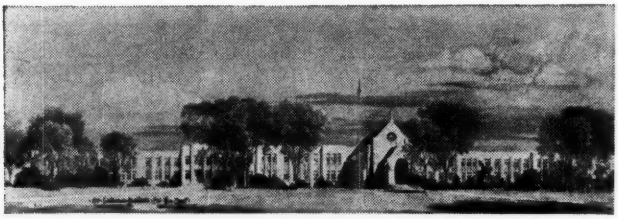

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No. 88 *Davis,* Hallowell, Central Institute for the Deaf, St. Louis. 1950
Final report on temporary deafness following exposure to loud tones and noise.

No. 89 *Bergman,* Moe, Ed.D., New York, N. Y. 1950
The Audiology Clinic.

No. 92 *Hood,* J. D., National Hospital, London. 1950
Studies in auditory fatigue and adaption.

No. 94 *Wedenberg,* Erik, M.D., Caroline Hospital, Stockholm. 1951
Auditory training of deaf and hard of hearing children.

No. 97 *Berg,* Karl, Rikshospitalet, Oslo. 1951
The toxic effect of streptomycin on the vestibular and cochlear apparatus.

No. 98 *Nilsson,* Gunnar, M.D., Caroline Hospital, Stockholm. 1952
The immediate improvement of hearing following the fenestration operation.

No. 101 *Palva,* Tauno, M.D., Otol. Clinic, Turku, Finland. 1952
Finnish speech audiometry.

No. 106 *Myklebust,* Helmer, Ed.D., and *Brutton,* Milton, Ph.D. Evanston and Devon. 1953
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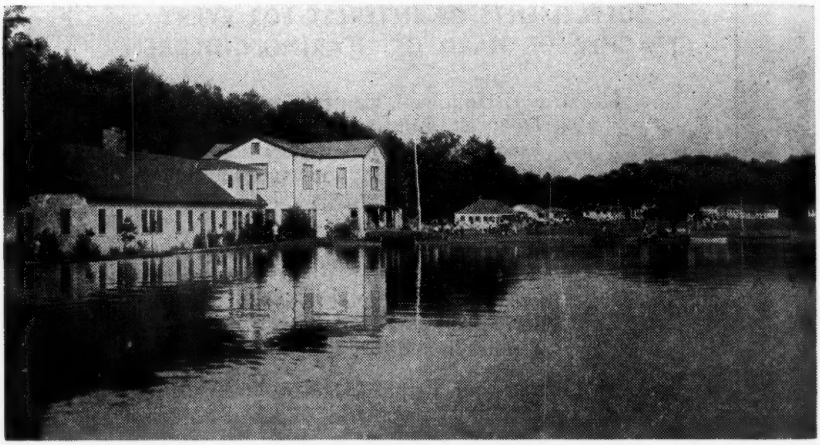

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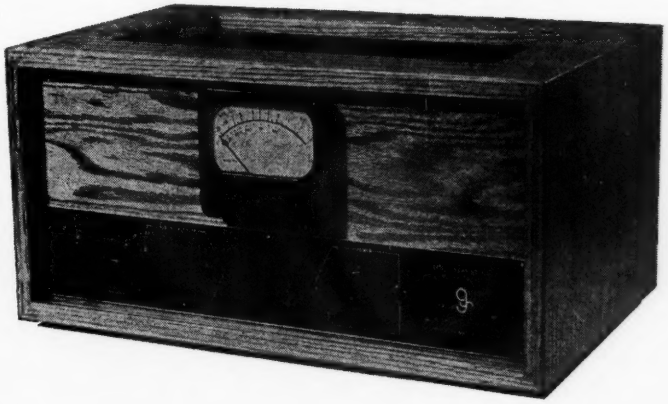

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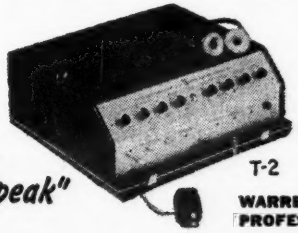

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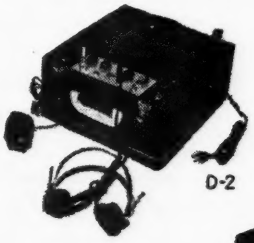

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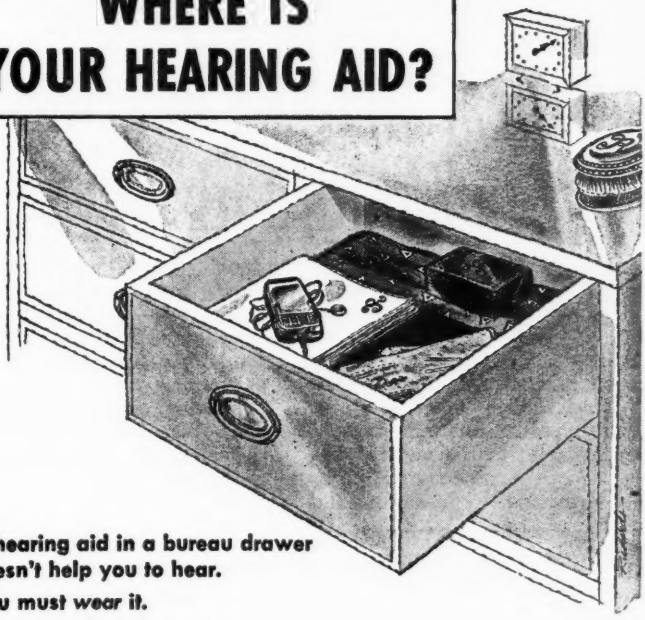

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The American Annals of the Deaf

The AMERICAN ANNALS OF THE DEAF was founded in 1847 at the American School for the Deaf in Hartford, Connecticut, by the members of the faculty of that school, which is the first free public school for the deaf in America. Although the journal received the approval of the administrative school authorities, the periodical was first entirely sponsored by the members of the faculty. After two years the ANNALS was discontinued for some months but was revived by the members of the Convention of American Instructors of the Deaf in their first meeting in New York, N. Y., in 1850.

In April, 1861, the publication ceased because of the War Between the States, inasmuch as the membership of the Convention was made up of northerners and southerners in almost equal proportion. In September, 1868, the AMERICAN ANNALS OF THE DEAF resumed publication with the editorial offices on Kendall Green, in Washington, D. C., where it has since remained.

The AMERICAN ANNALS OF THE DEAF is the official organ of the Conference of Executives of American Schools for the Deaf, which was organized in 1868, and of the Convention of American Instructors of the Deaf, founded in 1850. According to the Library of Congress it is the oldest educational publication in the United States still in existence. It is also the oldest journal on the education of the deaf in the world.

The ANNALS is published five times a year, being issued in September, November, January, March, and May. The subscription price is $4.00 a year, payable in advance. If five or more copies of the ANNALS are sent to one address, the subscription price is $3.50 a year. Single numbers sell for seventy-five cents, except for the January number which sells for $2.00. Back issues are available for 1847, 1848, 1849, 1857, and from September, 1868, to the present. Indexes for 1847–1875, 1876–1885, 1886–1895, 1896–1905, are available at $2.00 each. Indexes for 1906–1915, 1916–1925, 1926–1935, 1935–1945, were issued as regular numbers of the ANNALS. All back issues prior to 1930 sell for $1.00 each. All requests for subscriptions or for back numbers should be addressed to Editor, AMERICAN ANNALS OF THE DEAF, Gallaudet College, Washington 2, D. C.

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